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Amendment to Claims

This listing of Claims will replace all prior versions and listings of claims in this Application.

Listing of Claims

Claim 1. (CURRENTLY AMENDED) A method of forming a silicon-germanium layer on an insulator, comprising:

preparing a silicon substrate;

depositing a layer of silicon-germanium on the silicon substrate to form a

silicon/silicon-germanium portion;

implanting hydrogen ions in the silicon-germanium layer, including implanting

hydrogen ions taken from the group of hydrogen ions consisting of H^+ ions and H_2^+ ions, at an

dose
ion dose of between about $1 \cdot 10^{16} \text{ cm}^{-2}$ and $5 \cdot 10^{17} \text{ cm}^{-2}$ at an energy of between about 1 keV to 300

keV;

preparing an insulator substrate;

bonding the silicon/silicon-germanium portion to the insulator substrate with the silicon-germanium layer in contact with the insulator substrate to form a bonded entity;

curing the bonded entity; and

thermally annealing the bonded entity to split the bonded entity into a silicon/silicon-germanium portion and a silicon-germanium-on-insulator portion and to relax the silicon germanium layers.

Claim 2. (ORIGINAL) The method of claim 1 which further includes depositing an epitaxial silicon layer on the hydrogen-implanted silicon germanium layer before said bonding;

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silicon/silicon-germanium portion and a silicon-germanium-on-glass portion and to relax the silicon germanium layers.

Claim 11. (ORIGINAL) The method of claim 10 which further includes depositing an epitaxial silicon layer on the hydrogen-implanted silicon germanium layer before said bonding; and removing the silicon germanium layer from the silicon-germanium-on-glass portion after said thermal annealing to form a relaxed silicon-on-glass portion.

B Claim 12. (ORIGINAL) The method of claim 10 wherein said depositing a layer of silicon-germanium on the silicon substrate includes depositing a layer of silicon-germanium to a thickness of between about 20 nm to ¹⁰⁰⁰~~100~~ nm in biaxial compression strain form at a germanium concentration of between about 10% to 60%, and wherein the germanium concentration is distributed in the layer taken from the group of distributions consisting of uniform distribution and graded distribution.

B Claim 13. (ORIGINAL) The method of claim 10 wherein said implanting hydrogen ions in the silicon-germanium layer includes implanting hydrogen ions taken from the group of hydrogen ions consisting of H⁺ ions and H₂⁺ ions, at an ion ^{dose}~~doses~~ of between about $1 \cdot 10^{16}$ cm⁻² and $5 \cdot 10^{17}$ cm⁻² at an energy of between about 1 keV to 300 keV.

Claim 14. (ORIGINAL) The method of claim 13 which includes implanting ions taken from the group of ions consisting of argon, helium and boron.

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